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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/802,439	03/17/2004	William Morrison	H0004497-9986(1161.115510	3524
128 7590 01/09/2008 HONEYWELL INTERNATIONAL INC. 101 COLUMBIA ROAD P O BOX 2245 MORRISTOWN, NJ 07962-2245			EXAMINER ROST, ANDREW J	
			ART UNIT 3753	PAPER NUMBER
			MAIL DATE 01/09/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/802,439

Applicant(s)

MORRISON, WILLIAM

Examiner

Andrew J. Rost

Art Unit

3753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 October 2007.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-34 is/are pending in the application.
- 4a) Of the above claim(s) 29-32 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3-28, 33 and 34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. This action is in response to the amendment filed 10/25/2007. Claims 1, 9, 27, 28 and 34 have been currently amended. Claim 2 has been canceled. Presently, claims 1 and 3-34 are pending with claims 29-32 being withdrawn.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 3 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Min (US 2005/0092950) in view of Smejkal (4,363,461) and further in view of McIntosh (6,100,655).

Regarding to claim 1, Min discloses a motor brake structure used for opening and closing a valve structure with the actuator assembly having a motor (10), a biasing mechanism (resilient spring 36) for driving the valve stem in a direction opposite to the motor driving direction and a brake (50) that increases the time required for the closing of the valve by the biasing mechanism. Min does not disclose the use of at least one linear spring (Min discloses a torsion spring). However, Smejkal teaches the use of a torsion spring and the use of a linear spring to be structural equivalence when providing a bias force to return a motor plate to a desired position (col. 5, line 55 to col. 6, line 5).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the biasing mechanism (torsion spring) of Min as a linear spring as taught by Smejkal due to structural equivalence between a torsion spring and a linear spring. Min does not expressly disclose the spring closing in a time period to create water hammer and the brake slowing the return of the valve in a time period to prevent water hammer. However, McIntosh discloses a mechanical return actuator for a valve that teaches the "the force of the return spring can be so great as to constitute a danger, or to cause water hammer in valved applications" and that "to solve this problem, miniature hydraulic pistons, weighted speed governors, brakes or other speed controllers have been added" in col.1, lines 42-49. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made that while Min does not expressly state the presence of water hammer and the use of a brake to eliminate water hammer that McIntosh teaches that the use of return springs under force can cause water hammer in valved applications and that a brake can be used to eliminate water hammer.

In regards to claims 3 and 8, Min discloses the brake uses friction and contacts a sidewall of the motor housing when a predetermined rotational velocity is reached (paragraph 0060).

4. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Min in view of Smejkal further in view of McIntosh and further in view of Weiss et al. (6,097,123).

The modified Min reference discloses a valve assembly that provides a motor, a return spring that provides water hammer, and a brake that eliminates water hammer.

The modified Min reference does not disclose a brake that uses magnetic forces.

However, Weiss et al. disclose a stationary ring of conductive material with a magnet and as the magnet moves, eddy currents are produced in the stationary ring resulting in impedance to the movement of the transmission (col. 2, lines 19-27). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the brake of the modified Min reference with a brake that uses magnetic forces as taught by Weiss et al. in order to reduce contact friction from the brake.

5. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Min in view of Smejkal further in view of McIntosh and further in view of Boucher (6,688,438).

The modified Min reference discloses a valve assembly that provides a motor, a return spring that provides water hammer, and a brake that eliminates water hammer. The modified Min reference does not disclose a brake that uses a change in gearing ratio to affect a change in rotational velocity. However, Boucher teaches a gearing that has at least one reduction stage between the motor and the transmission element and between the motor and the spring (col. 2, lines 32-36) with the gearing supporting the motor so that the required forces can be obtained on the actuating member. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a gearing with a reduction stage between the motor and the

transmission element as the brake of the modified Min reference as taught by Boucher in order to slow the rotational velocity of the transmission element.

6. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Min in view of Smejkal further in view of McIntosh and further in view of Pasch et al. (6,021,955).

The modified Min reference discloses a valve assembly that provides a motor, a return spring that provides water hammer, and a brake that eliminates water hammer. The modified Min reference does not disclose a brake that has the motor periodically pulsing to slow the return of the valve. However, Pasch et al. teach periodically energizing and pulsing the motor for regulating the speed of a damper as the damper moves in order to reduce noise, spare damages and prevent over travel of the motor (col. 10, lines 29-31). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the modified Min reference with a braking mechanism with a motor that pulses the motor as taught by Pasch et al. in order to spare damages to the valve body.

7. Claims 9-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Min in view of Smejkal and further in view of McMillan et al. (6,979,965).

Regarding claim 9, Min discloses a motor brake structure used for opening and closing a valve structure in a pipe (31) with the actuator assembly having a motor (10), a biasing mechanism (resilient spring 36) for driving the valve stem in a direction

opposite to the motor driving direction and a brake (50) that increases the time required for the closing of the valve by the biasing mechanism. Min does not disclose the use of at least one linear spring (Min discloses a torsion spring). However, Smejkal teaches the use of a torsion spring and the use of a linear spring to be structural equivalence when providing a bias force to return a motor plate to a desired position (col. 5, line 55 to col. 6, line 5). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the biasing mechanism (torsion spring) of Min as a linear spring as taught by Smejkal due to structural equivalence between a torsion spring and a linear spring. Min does not disclose limiting the rotational velocity of the output shaft of the motor to less than 1000 rpms. However, McMillan teaches limiting the rotational velocity of a return spring to less than 1000 rpms. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to limit the rotation of the return spring to less than 1000 rpms.

In regards to claims 10-13, the modified Min reference discloses that the motor can be run in either a forward or reverse direction with the biasing mechanism working in the opposite direction to the motor driving direction depending on the orientation of the valve in the pipe (paragraph 0064).

In regards to claim 14, the modified Min reference discloses the biasing structure is a resilient spring (36).

In regards to claim 15, the modified Min reference discloses the motor has a motor housing (12).

In regards to claim 16, the modified Min reference discloses the brake is of a flexible material and moves outwardly to engage a portion of the motor housing (paragraph 0050).

In regards to claim 17, the modified Min reference discloses the output shaft of the motor (56) is radially centered and flexible material of the brake is secured to the shaft (Figure 2).

In regards to claims 18-20, the modified Min reference discloses the brake has a structure of a straight piece (512) with curved portions (513) extending from the ends of the straight piece with thickened portions (514) at the end of the curved portions with the thickened portions contacting the housing under a predetermined force (Figures 6, 7).

8. Claims 21-25, 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Min in view of McMillan et al.

Regarding claim 21, the modified Min reference discloses an actuator for a valve that is movable between an open and closed position in a pipe with the actuator having a damping mechanism (brake 50) that limits the return speed and time of the biasing mechanism but does not limit the operation of the motor. Min does not expressly disclose that the brake increases the time period required for the biasing mechanism to close the valve stem to 4 seconds or more. However, McMillan teaches the spring returning the valve from a fully opened position to a fully closed position in about 90 seconds. Therefore, it would have been obvious to one of ordinary skill in the art at the

time the invention was made to increase the time to close the valve to greater than 4 seconds.

In regards to claims 22-25, the modified Min reference discloses the actuator for a valve in a pipe controlling the flow of a fluid and can be configured to handle water systems.

Regarding claims 27, the modified Min discloses a motor brake structure used for opening and closing a valve structure with the actuator assembly having a motor (10), a biasing mechanism (resilient spring 36) for driving the valve stem in a direction opposite to the motor driving direction and a brake (50) that increases the time required for the closing of the valve by the biasing mechanism with the rotational velocity of the return spring is less than 1000 rpms.

In regards to claim 28, the modified Min reference discloses the claimed invention except for the rotational velocity being less than 800 rpms. It would have been obvious to one having ordinary skill in the art at the time the invention was made to limit the rotational velocity to less than 800 rpms instead of less than 1000 rpms, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

9. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Min in view of McMillan as applied to claim 21 above, and further in view of Pasch et al.

The modified Min reference discloses an actuator for a valve that is movable between an open and closed position in a pipe with the actuator having a damping

mechanism (brake 50) that limits the return speed and time of the biasing mechanism but does not limit the operation of the motor. The modified Min reference does not disclose the use of a thermostat to send control signals to the actuator. However, Pasch et al. disclose that motors in heating and cooling systems respond to a control arrangement which sends a signal corresponding to a thermostat (col. 1, lines 49-52). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to control the actuator of Min with a thermostat as taught by Pasch et al. in order to control a fluid flow in a temperature regulated system.

10. Claims 33 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Min in view of Smejkal further in view of McIntosh and further in view of McMillan.

In regards to claim 33, Min in view of Smejkal further in view of McIntosh discloses an actuator with a motor, biasing mechanism and a brake. The modified Min reference does not expressly disclose that the brake increases the time period required for the biasing mechanism to close the valve stem to 4 seconds or more. However, McMillan teaches the spring returning the valve from a fully opened position to a fully closed position in about 90 seconds. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to increase the time to close the valve to greater than 4 seconds.

In regards to claim 34, the modified Min discloses a motor brake structure used for opening and closing a valve structure with the actuator assembly having a motor (10), a biasing mechanism (resilient spring 36) for driving the valve stem in a direction

opposite to the motor driving direction and a brake (50) that increases the time required for the closing of the valve by the biasing mechanism with the rotational velocity of the return spring is less than 1000 rpms.

Response to Arguments

11. Applicant's arguments filed 10/25/2007 have been fully considered but they are not persuasive.

12. Applicant's arguments regarding the combination of Min and McIntosh are not persuasive. Min discloses the recited structure (except for the linear spring which is taught by Smejkal) but is silent as to the spring closing in a time that produces water hammer and "the brake is configured to work against the one or more linear springs to increase the time period that the biasing mechanism closes the valve stem by an amount that eliminates water hammer in the fluid system" (claim 1, lines 11-13). However, McIntosh teaches that the use of spring returns in fluid systems have a common problem of closing a valve in a manner that would produce water hammer and a common solution to the problem is to provide a brake to control slamming or excessive speed (col. 1, lines 45-49). Therefore, applicant's arguments are not persuasive.

13. In response to applicant's argument that McMillan et al. is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the

claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, McMillan et al. teach the use of a control device having a spring return that has limited return speed. Both Min and McMillan et al. relate to control devices having a motor and a spring return vice and are analogous art.

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew J. Rost whose telephone number is 571-272-2711. The examiner can normally be reached on 7:00 - 4:30 M-Th and 7:00 - 12:00 Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Huson can be reached on 571-272-4887. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AJR, ASK 7 JANUARY 2008


RAMESH KIRSHNAMURTHY
PRIMARY EXAMINER